

## **ABSTRACT OF THE DISCLOSURE**

**[0069]** An atrial, anti-arrhythmia system and method are provided. The system comprises: at least two electrodes attached to the atrium for providing independently controlled stimulus through each electrode; detection circuitry that can sense atrial fibrillation or the cardiac cycle; and stimulus generator that can deliver stimulation through at least two electrodes to stop atrial fibrillation. The method for treating atrial fibrillation has three possible modes: a first mode for detecting ongoing atrial fibrillation and stopping it; a second mode for detecting the cardiac cycle and delivering stimuli to the atrium after it has already begun to contract in order to suppress the onset of atrial fibrillation; and a third mode which applies pacing pulses to the atrium in a timed sequence to pace and contract the atrium faster than the native rate to preempt the initiation of atrial fibrillation.